

WHAT IS CLAIMED IS:

- 1 1. An exhaust gas purifying system for an internal
2 combustion engine, comprising:
3 an exhaust gas purifying device disposed in an
4 exhaust passage of the engine to remove specific content
5 from exhaust gas; and
6 a control unit arranged
7 to determine a recovery execution timing of
8 executing recovery processing for recovering the
9 exhaust gas purifying device from a specific content
10 stacked state;
11 to determine a target air/fuel ratio for
12 executing the recovery processing;
13 to determine a first engine controlled variable
14 relating to an air/fuel ratio on the basis of the
15 target air/fuel ratio; and
16 to determine a second engine controlled
17 variable relating to a combustion period at a value
18 different from a value employed during normal
19 processing when the recovery processing is executed.
- 1 2. The exhaust gas purifying system as claimed in claim
2 1, wherein the control unit is further arranged to
3 increase a temperature of the exhaust gas so as to be
4 higher than a temperature during the normal processing by
5 changing the second engine controlled variable.
- 1 3. The exhaust gas purifying system as claimed in claim
2 1, wherein the second engine controlled variable includes
3 one of a main injection timing, a pilot injection
4 quantity and a pilot injection.

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1 4. The exhaust gas purifying system as claimed in claim
2 3, wherein the main injection timing is retarded after a
3 top dead center, and the pilot injection timing is
4 advanced.

1 5. The exhaust gas purifying system as claimed in claim
2 1, further comprising an exhaust gas temperature sensor
3 for detecting an exhaust gas temperature of the exhaust
4 gas, the control unit being further arranged to determine
5 a unusual basic value for the second engine controlled
6 variable and to determine the second engine controlled
7 variable by correcting the unusual basic value on the
8 basis of the exhaust gas temperature.

1 6. The exhaust gas purifying system as claimed in claim
2 1, wherein the target air/fuel ratio for the recovery
3 processing is richer than the target air/fuel ratio for
4 the normal processing.

1 7. The exhaust gas purifying system as claimed in claim
2 1, wherein the exhaust gas purifying device includes a
3 particulate filter which removes particulates in the
4 exhaust gas.

1 8. The exhaust gas purifying system as claimed in claim
2 1, wherein the exhaust gas purifying device includes a
3 NOx trap catalyst for trapping NOx in the exhaust gas and
4 discharging the trapped NOx according to the air/fuel
5 ratio.

1 9. The exhaust gas purifying system as claimed in claim
2 1, further comprising an air/fuel ratio detector for

3 detecting an air/fuel ratio, the control unit being
4 further arranged to determine a basic value of the first
5 engine controlled variable according to the target
6 air/fuel ratio and to determine the first engine
7 controlled variable by correcting the basic value on the
8 basis of the detected air/fuel ratio.

1 10. The exhaust gas purifying system as claimed in claim
2 9, wherein the control unit is further arranged to
3 determine the first engine controlled variable by
4 correcting the basic value on the basis of the detected
5 air/fuel ratio when the target air/fuel ratio is richer
6 than or equal to a stoichiometric air/fuel ratio, and to
7 change a fuel injection quantity according to the first
8 engine controlled variable.

1 11. The exhaust gas purifying system as claimed in claim
2 9, wherein the control unit is further arranged to
3 determine the first engine controlled variable by
4 correcting the basic value on the basis of the detected
5 air/fuel ratio, and to change an intake air quantity
6 according to the first engine controlled variable.

1 12. The exhaust gas purifying system as claimed in claim
2 1, wherein the control unit is further arranged to
3 correct the first engine controlled variable on the basis
4 of the second engine controlled variable.

1 13. An exhaust gas purifying system for an internal
2 combustion engine, comprising:

3 an exhaust gas purifying device disposed in an
4 exhaust passage of the engine to remove specific content
5 from exhaust gas;

6 a control unit arranged
7 to determine whether recovery processing for
8 recovering the exhaust gas purifying device as to
9 accumulated specific contents in the exhaust gas
10 purifying device is executed;

11 to increase an exhaust gas temperature at a
12 temperature higher than an exhaust gas temperature
13 during a normal control, by setting an air/fuel
14 ratio at a target air/fuel ratio and by controlling
15 the a combustion period while maintaining the
16 air/fuel ratio at the target air/fuel ratio when the
17 recovery processing is executed.

1 14. A method of executing recovery processing of an
2 exhaust gas purifying disposed in an exhaust passage of
3 an internal combustion engine, comprising:

4 determining a recovery execution timing for recovery
5 processing of recovering the exhaust gas purifying device
6 from a specific content stacked state;

7 setting a target air/fuel ratio for executing the
8 recovery processing;

9 setting a first engine controlled variable relating
10 to an air/fuel ratio on the basis of the target air/fuel
11 ratio; and

12 setting a second engine controlled variable relating
13 to a combustion period at a value different from a value
14 employed during normal processing when the recovery
15 processing is executed.

1 15. An exhaust gas purifying system for an internal
2 combustion engine, comprising:
3 exhaust gas purifying means for removing specific
4 content from exhaust gas, the exhaust gas purifying means
5 being disposed in an exhaust passage of the engine;
6 recovery timing determining means for determining a
7 recovery execution timing for recovery processing of
8 recovering the exhaust gas purifying device from a
9 specific content stacked state;
10 recovery mode target air/fuel ratio setting means
11 for setting a target air/fuel ratio for executing a
12 recovery of the exhaust gas purifying device;
13 first engine controlled variable setting means for
14 setting a first engine controlled variable relating to an
15 air/fuel ratio on the basis of the target air/fuel ratio;
16 and
17 second engine controlled variable setting means for
18 setting a second engine controlled variable relating to a
19 combustion period at a value different from a value
20 employed during normal processing when the recovery
21 processing is executed.